

HARVARD APPARATUS INC.
MASS FLOW CONTROLLER SYSTEMS

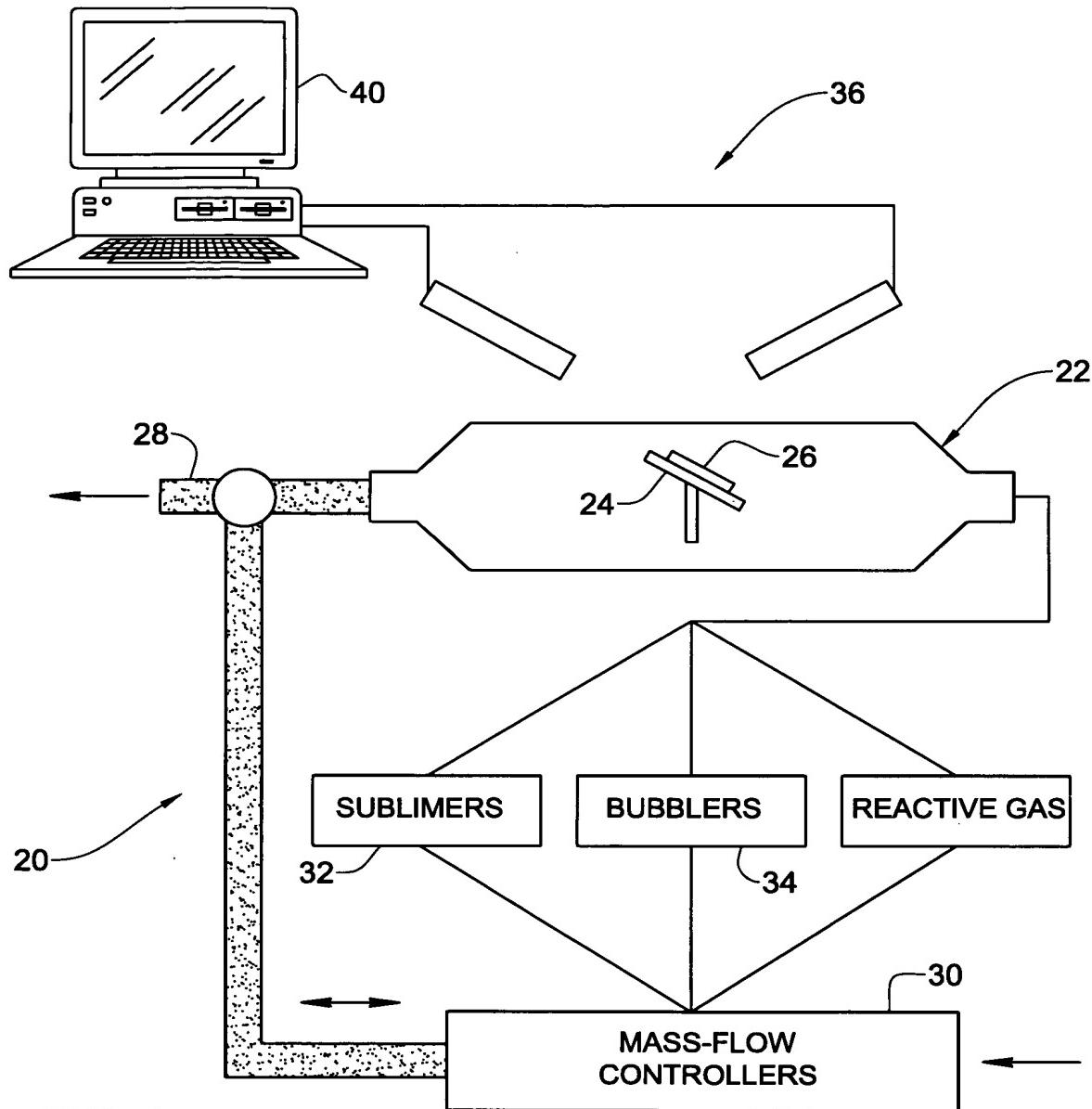


FIG. 1

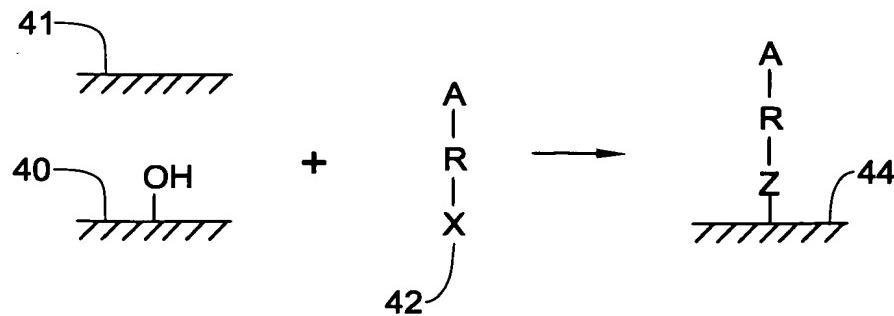


FIG. 2A

Substrate	Coupling Agent (X=silane or thiol)	Template Layer (Z=siloxane or metal sulfide)
$\begin{array}{c} \text{OH} \\ \\ \text{MO}_x \\ \\ \text{M= Si, Ti, In, Fe, ...} \\ \\ 40 \end{array}$	<p>A A= NH_2 or $-\text{N}^+ \text{C}_6\text{H}_4 \text{CO}_2^-$</p> <p>R R= alkyl or phenyl</p> <p>SiY_3 Y= halogen or alkoxy</p> <p style="text-align: center;">42</p>	<p style="text-align: center;">44</p>
$\begin{array}{c} \\ \text{M or MM'} \\ \\ \text{M= Au, Pt, Cu, ...} \\ \\ \text{MM'= GaAs, CdSe, ...} \\ \\ 41 \end{array}$	<p>NH₂ R or SH</p> <p>NH₂ R S — S</p> <p>NH₂ R= alkyl or phenyl</p> <p style="text-align: center;">42</p>	<p style="text-align: center;">44</p>

FIG. 2B

Substrate	Coupling Agent (X= OH, CO ₂ H, PO ₃ H ₂)	Template Layer (Z= alkoxysilane, phosphate or carboxylate)
$\begin{array}{c} \\ \text{Cl} \\ \\ \text{Si} \text{---} \text{O}^- \\ \\ 40 \end{array}$	HO - R - NH_2 R= alkyl or phenyl <p style="text-align: center;">42</p>	<p style="text-align: center;">44</p>
$\begin{array}{c} \\ \text{II - IV} \\ \\ \text{III - V} \\ \\ 41 \end{array}$	HOOC - R - NH_2 $(\text{HO})_2\text{P}^- \text{O}^- \text{R - NH}_2$ R= alkyl or phenyl <p style="text-align: center;">42</p>	<p style="text-align: center;">44</p>

FIG. 2B CONT

3/16

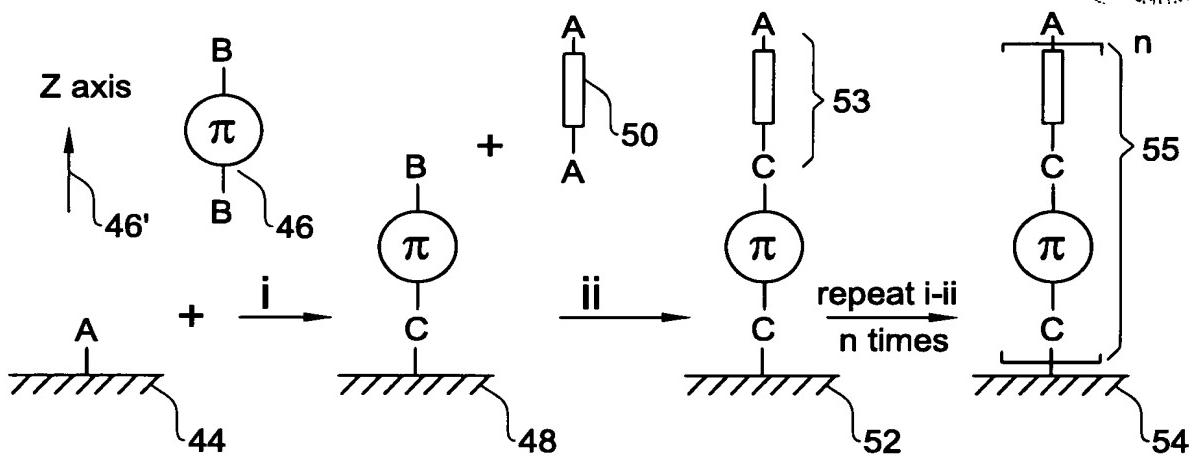


FIG. 3A

A	B	C	INS./SC	COND./SC	
$-NH_2$					INS/COND
$R-\text{NH}_2$ $R-\text{NH}_2$			$-(CH_2)_n^-$ $n=1-12$		
$-NH_2$	C=O	$\text{C}\equiv\text{N}-$			
$-SiCl_3$	$-\text{OH}$				SC/SC
	$-\text{OH}$		napthalene perylene terylene anthracene pentacene	porphine phthalocyanine	

FIG. 3B

4/16

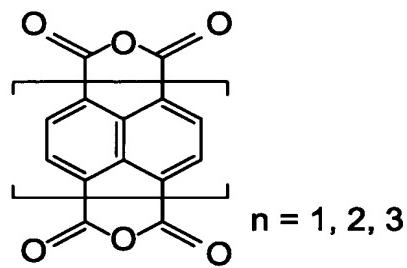


FIG. 4A

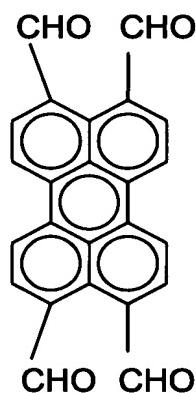


FIG. 4B

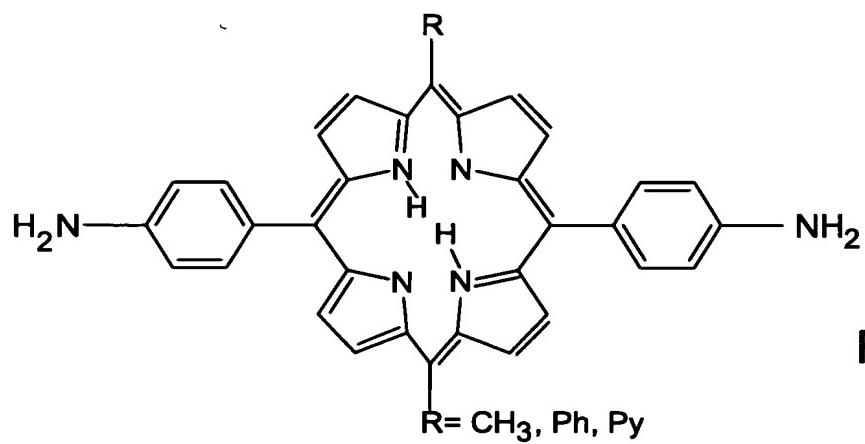


FIG. 4C

5/16

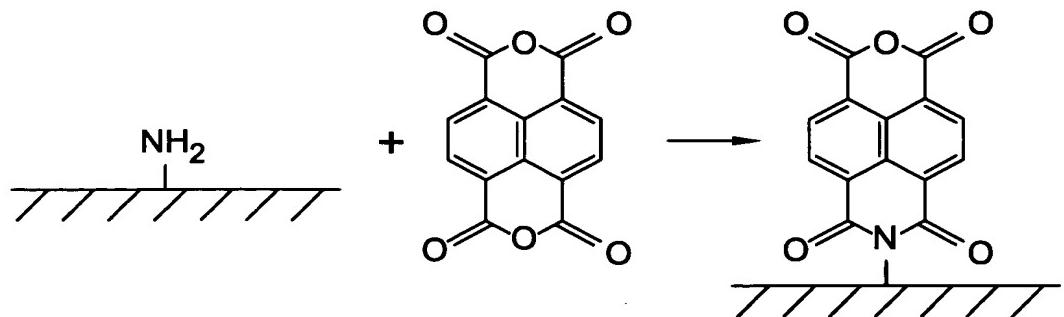


FIG. 5A

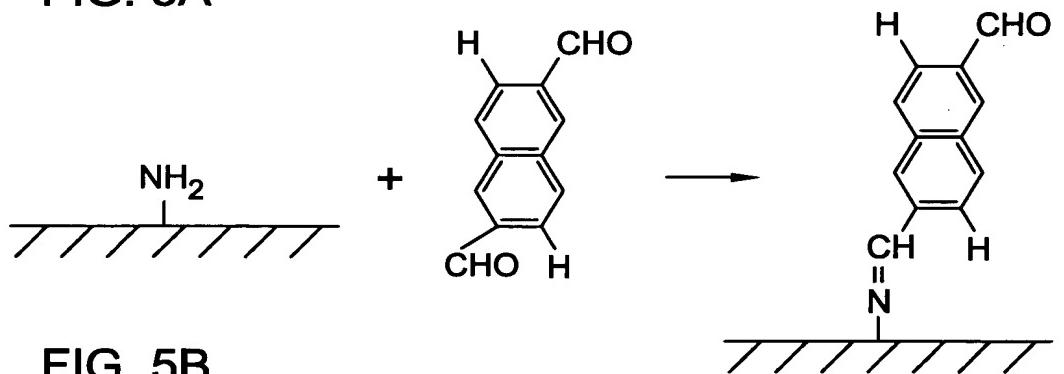


FIG. 5B

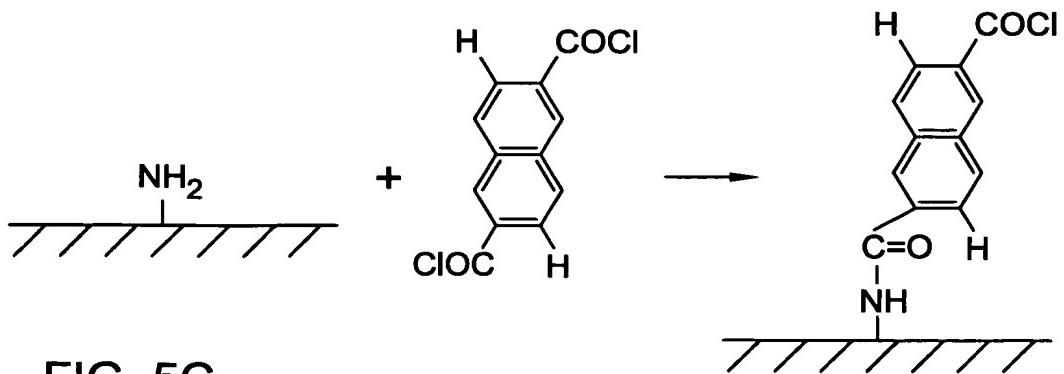


FIG. 5C

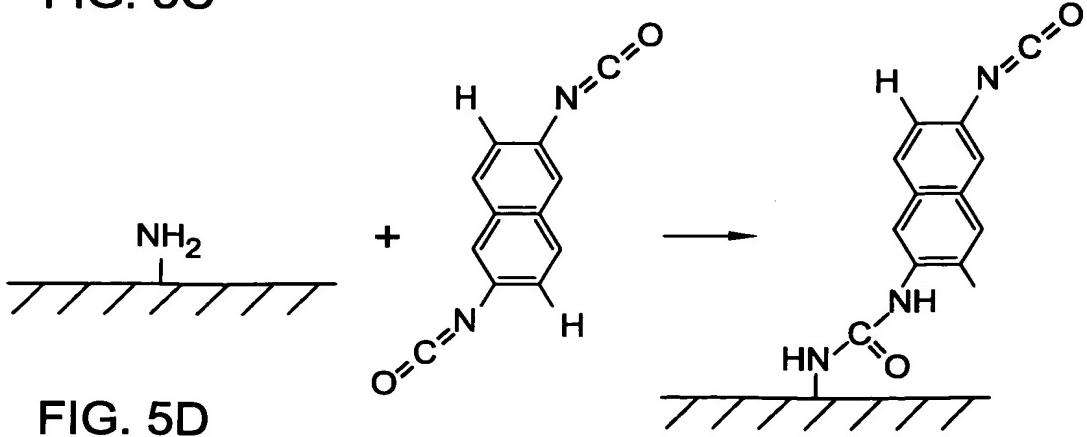


FIG. 5D

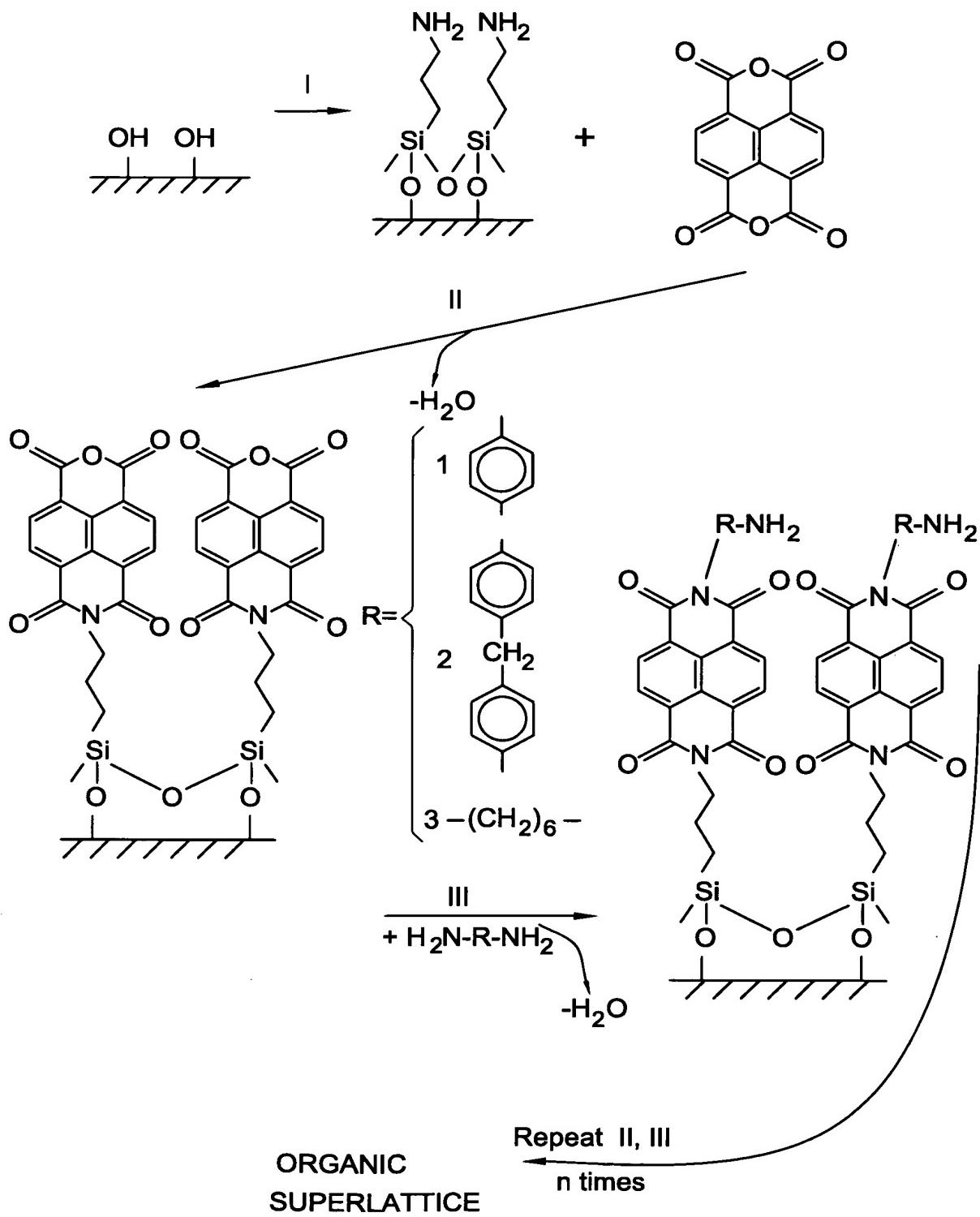


FIG. 6

7/16

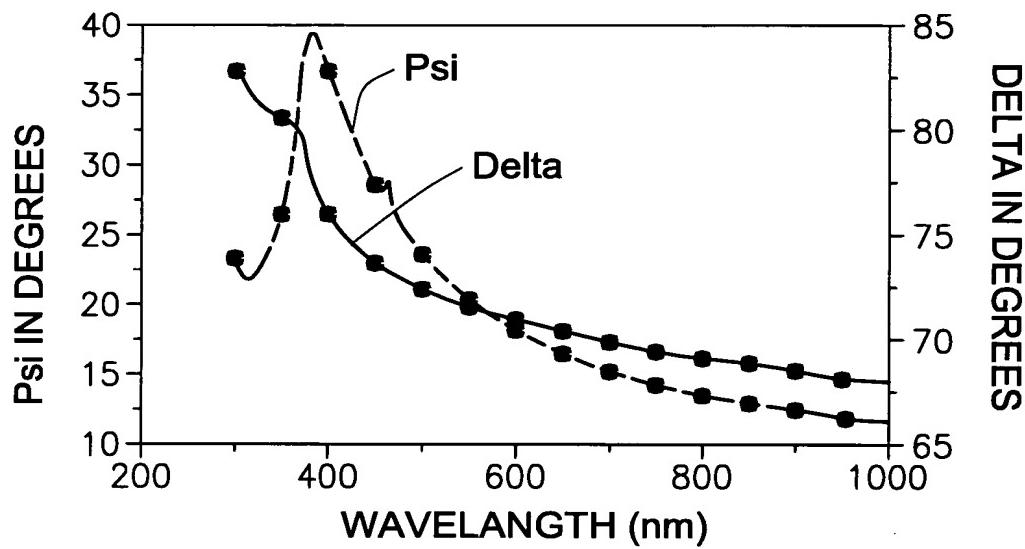


FIG. 7

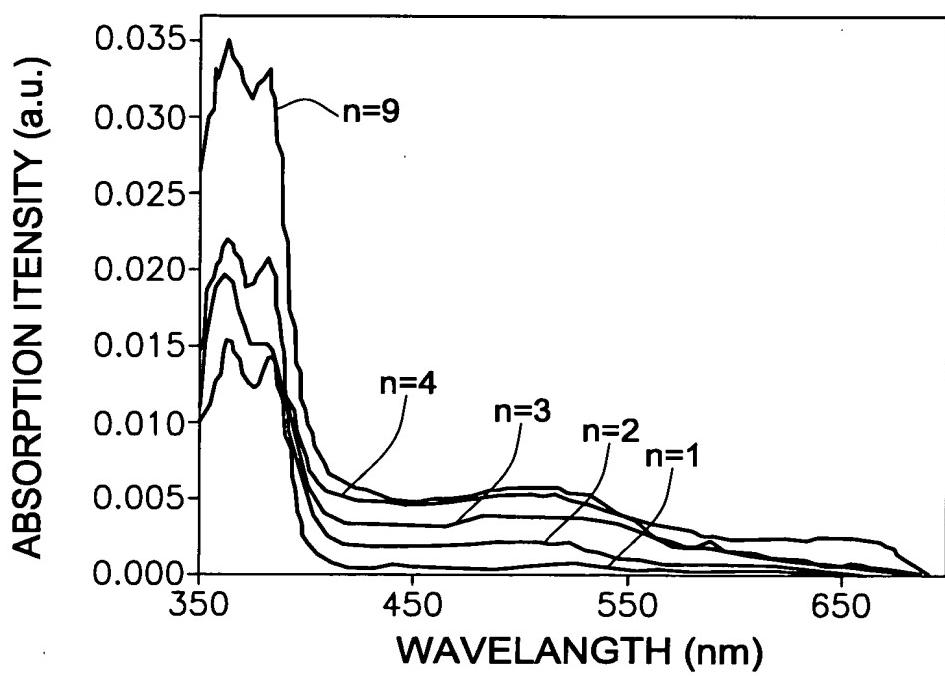


FIG. 8

8/16

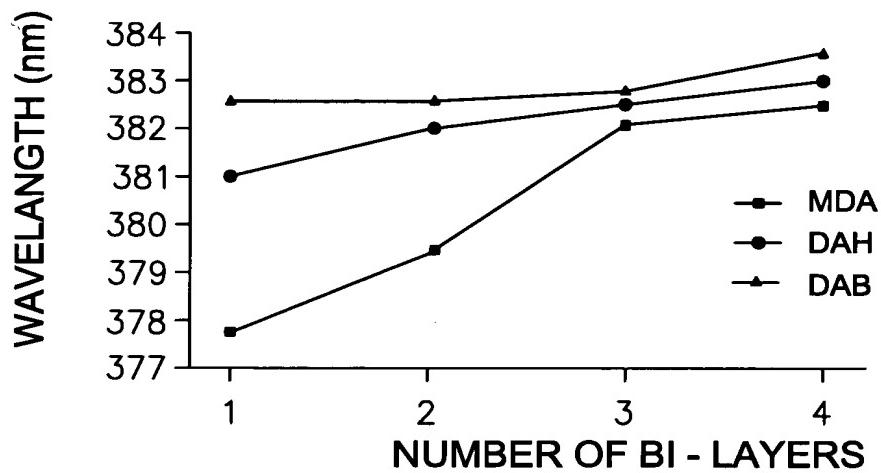


FIG. 9

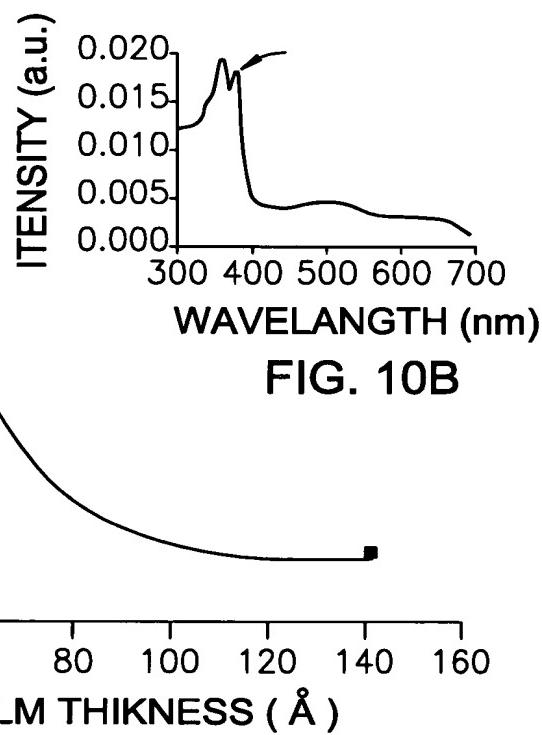


FIG. 10B

FIG. 10A

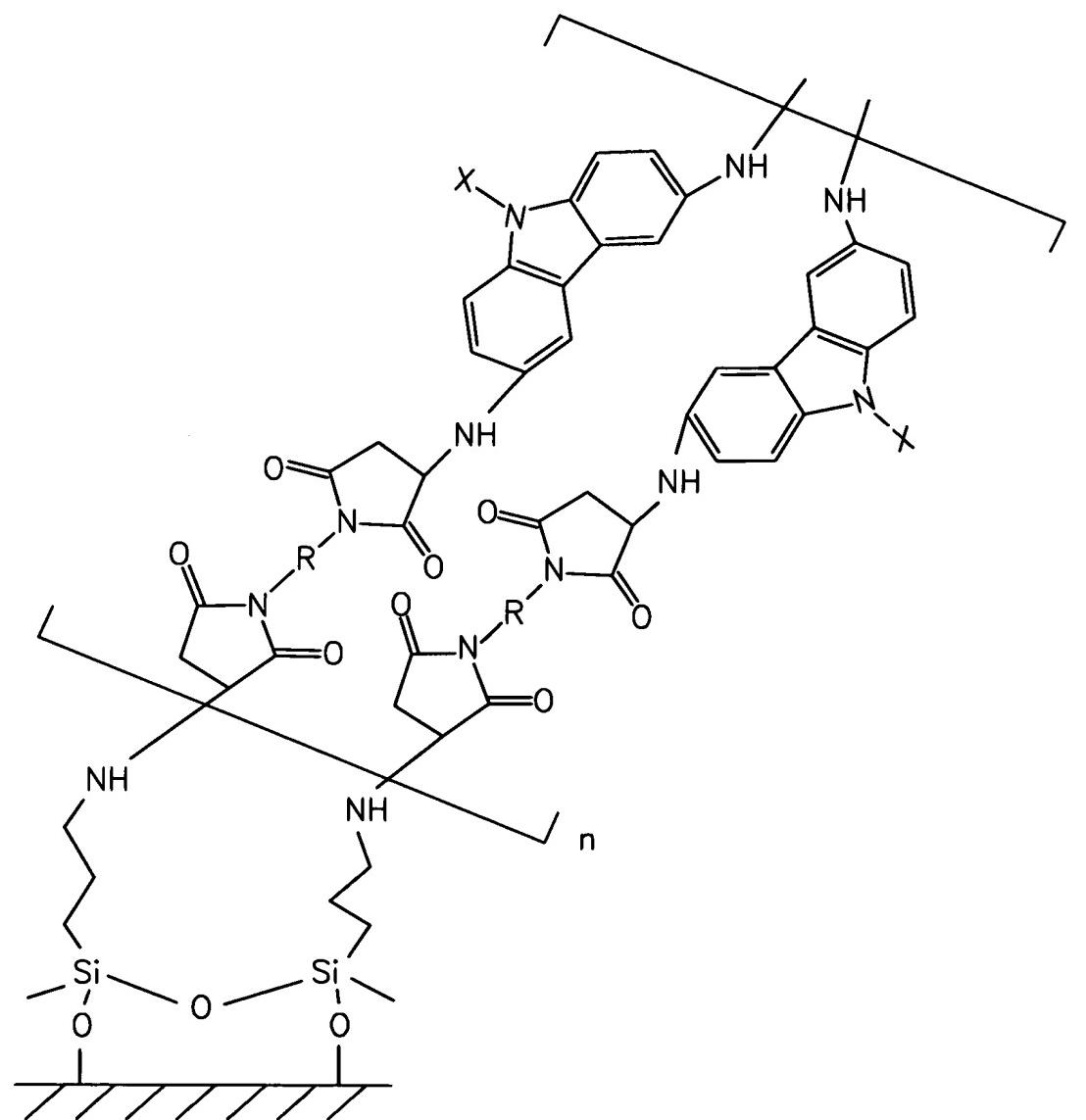


FIG. 11

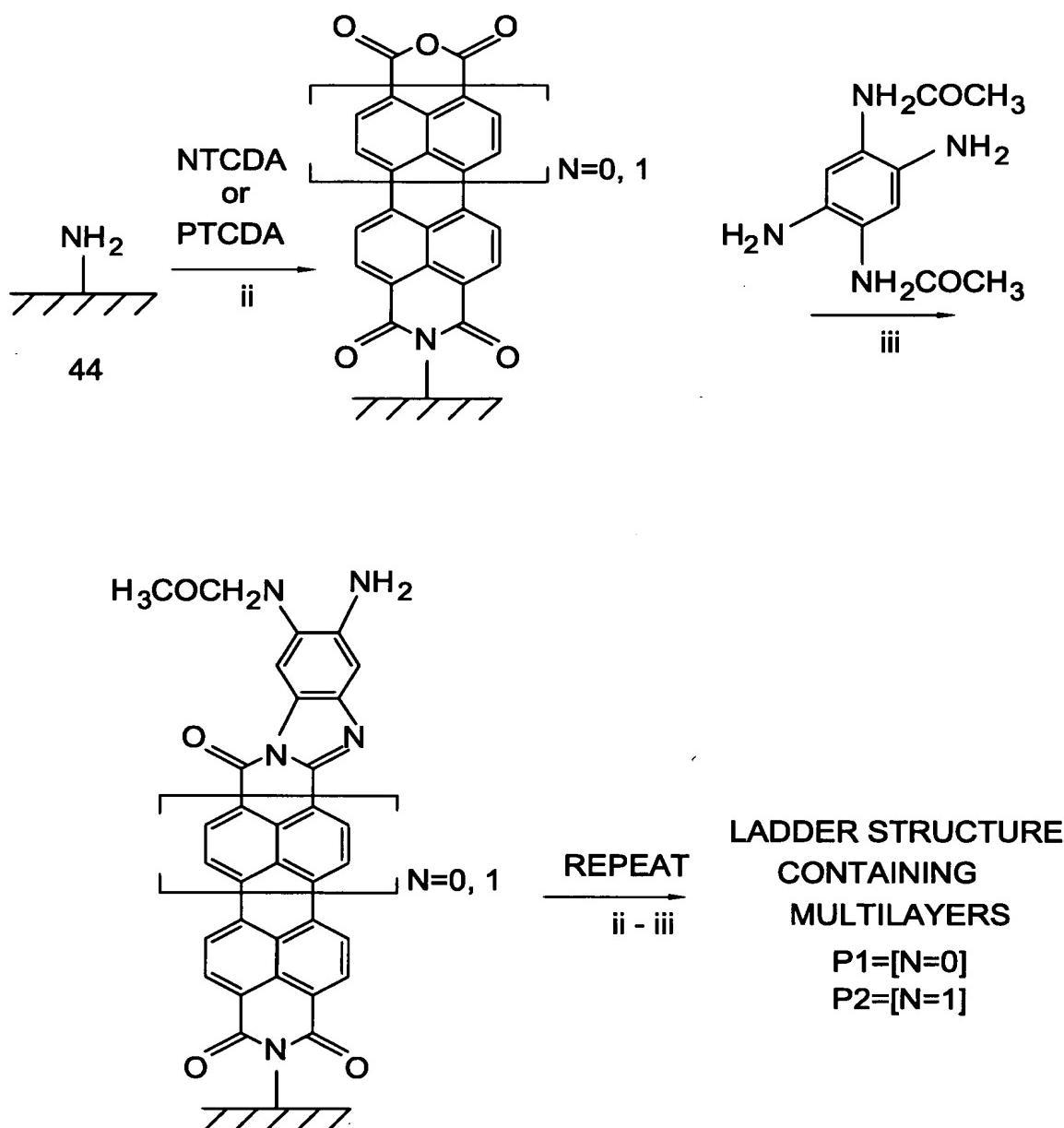


FIG. 12A

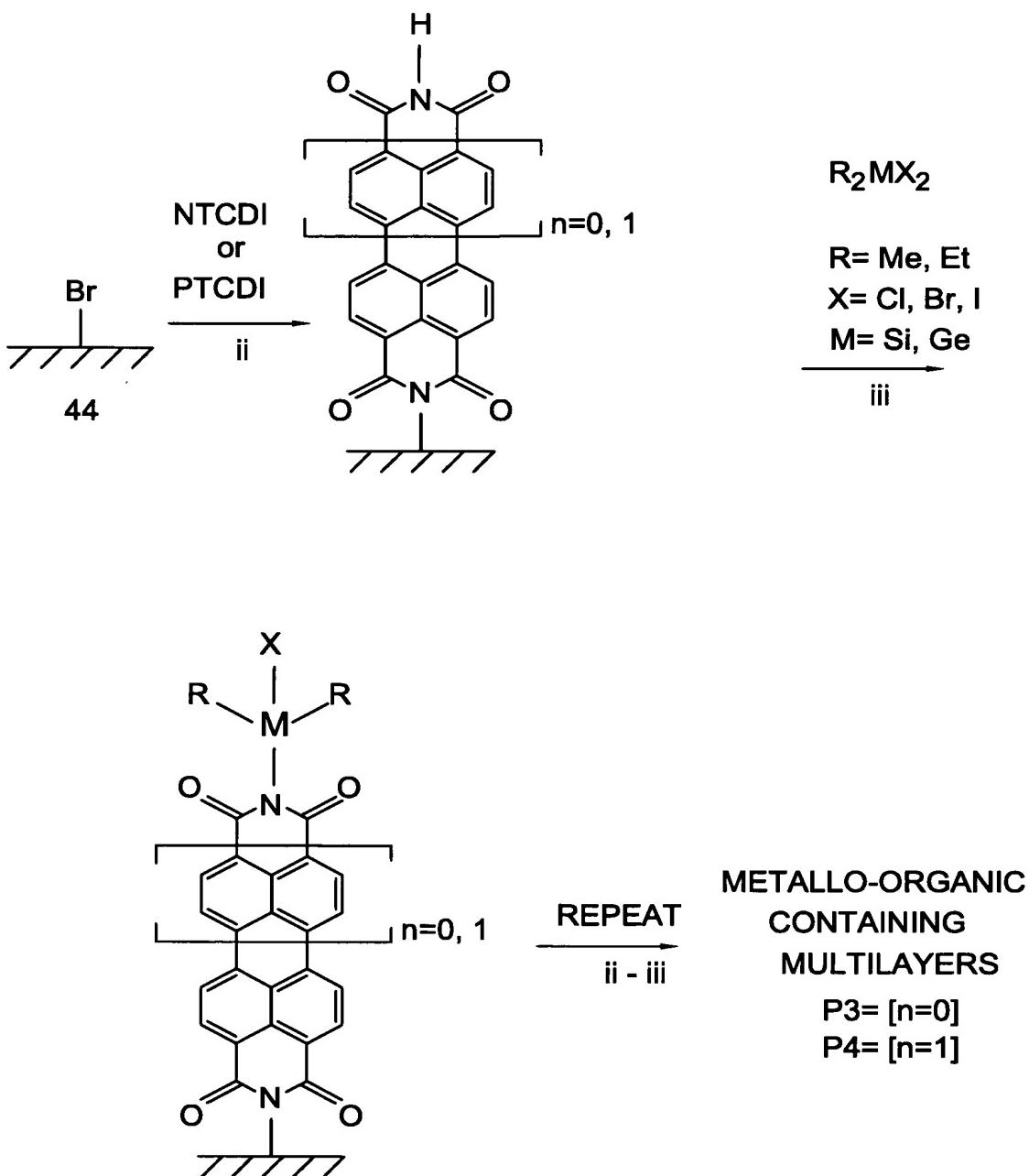


FIG. 12B

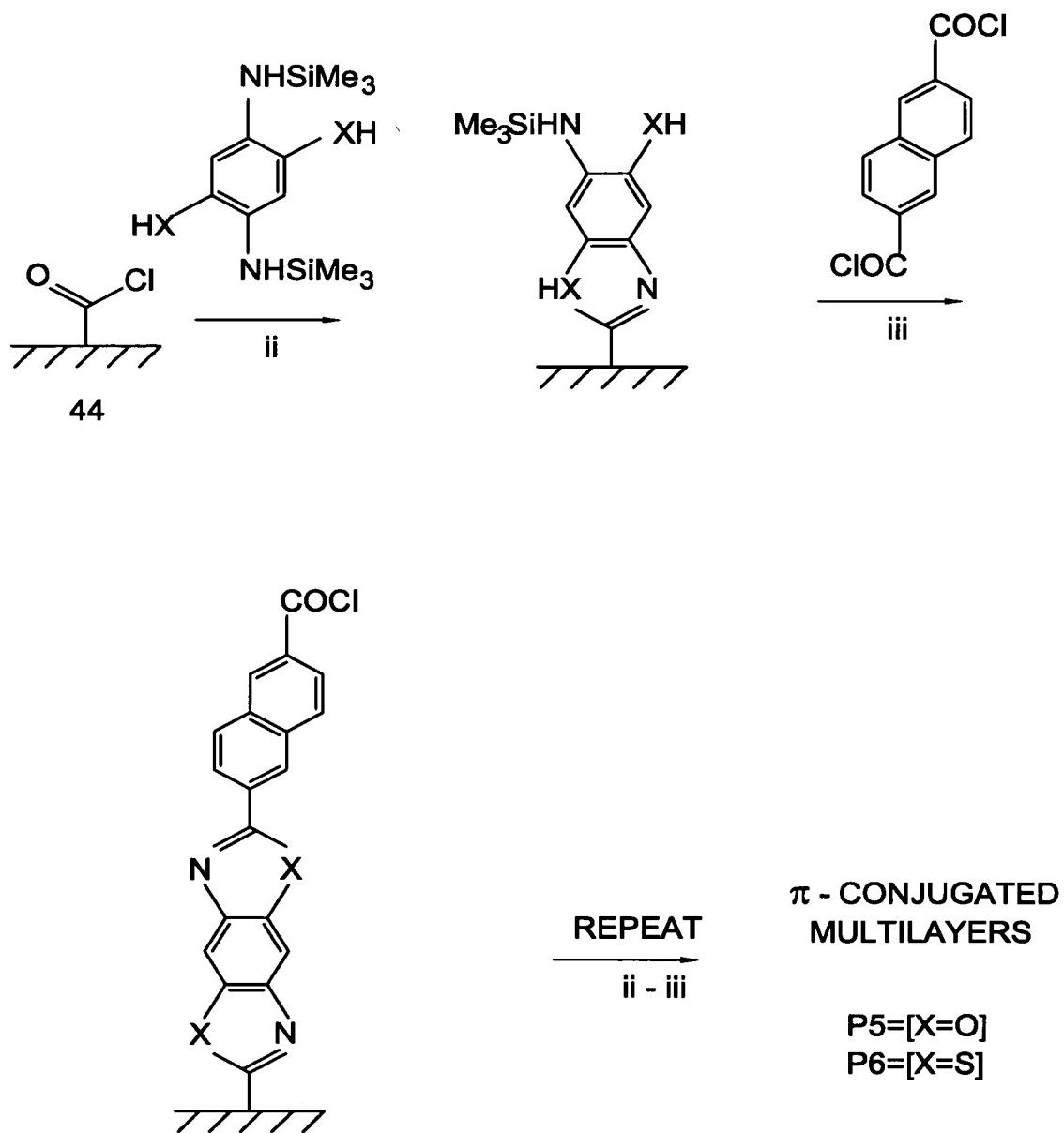


FIG. 12C

13/16

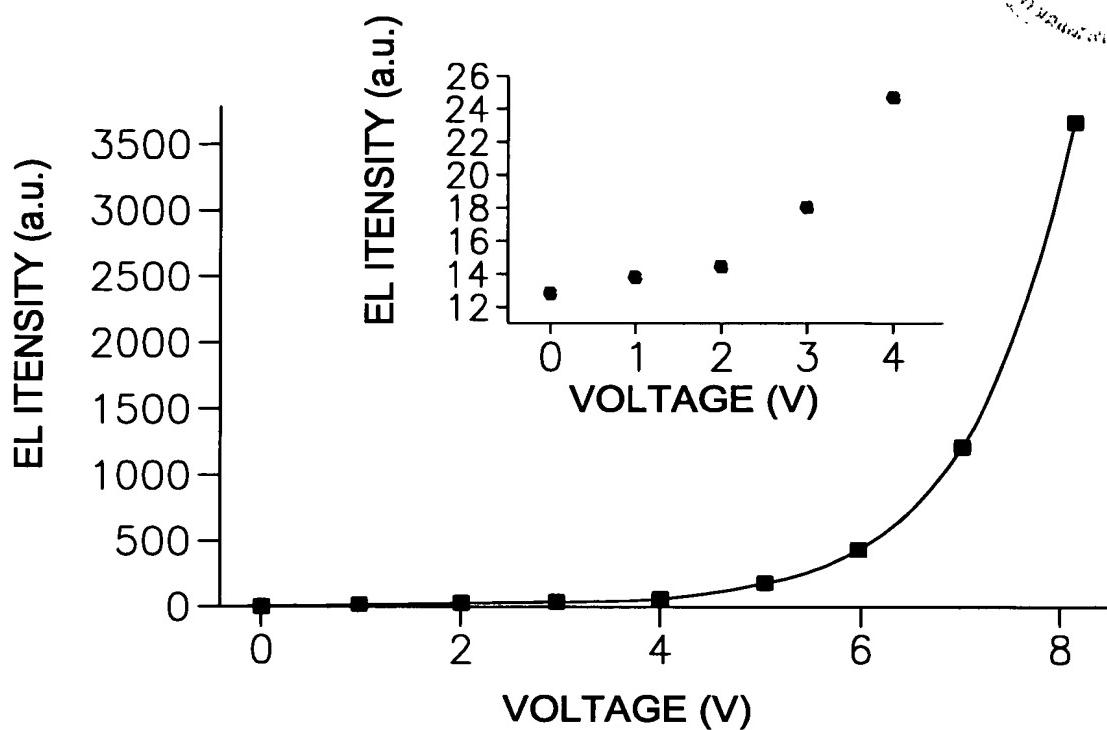


FIG. 13A

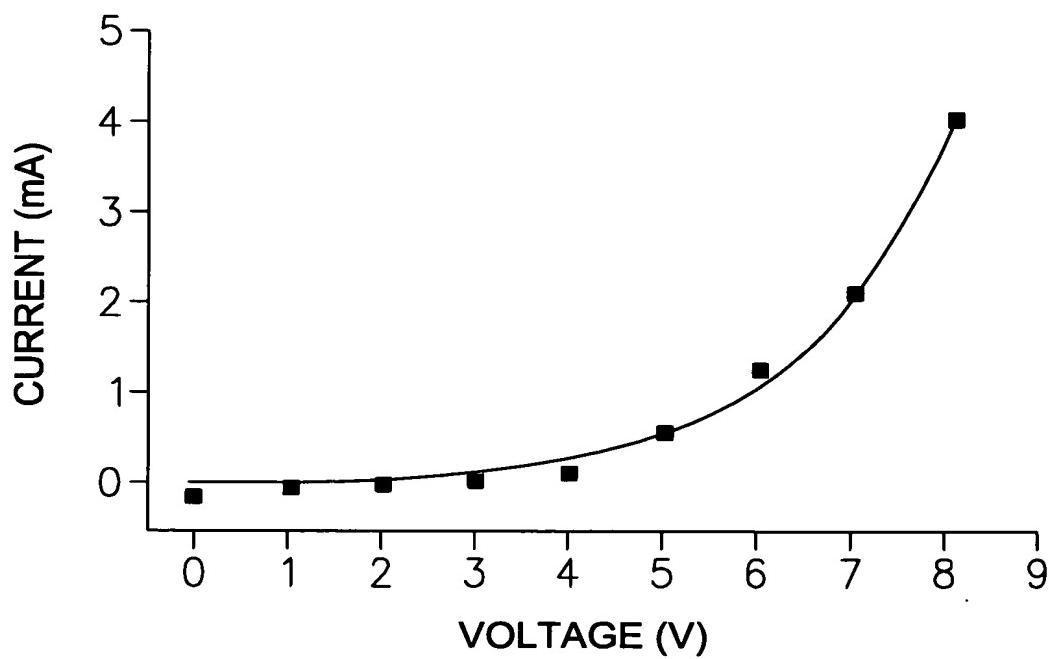


FIG. 13B

14/16

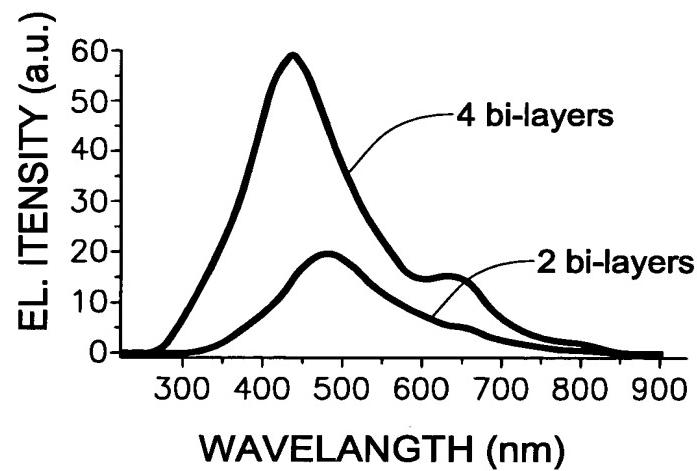


FIG. 14

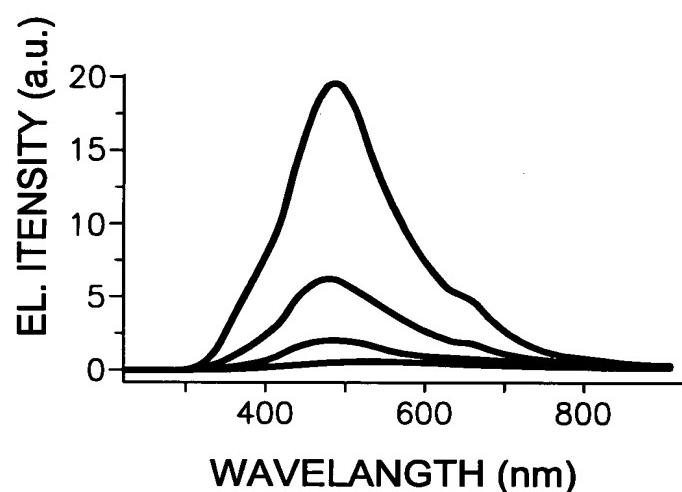


FIG. 15

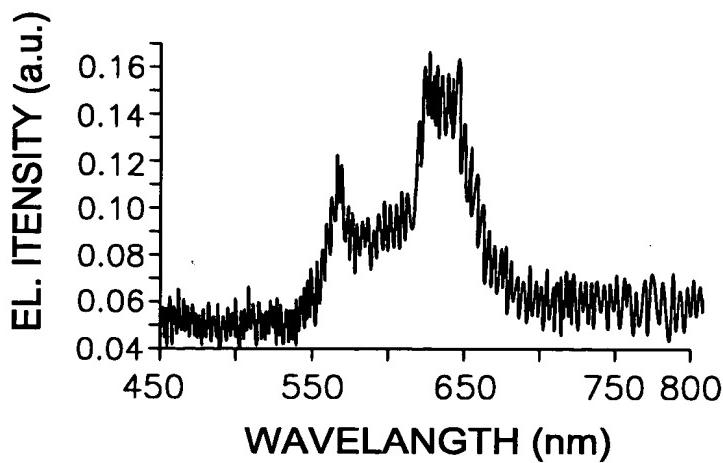


FIG. 16

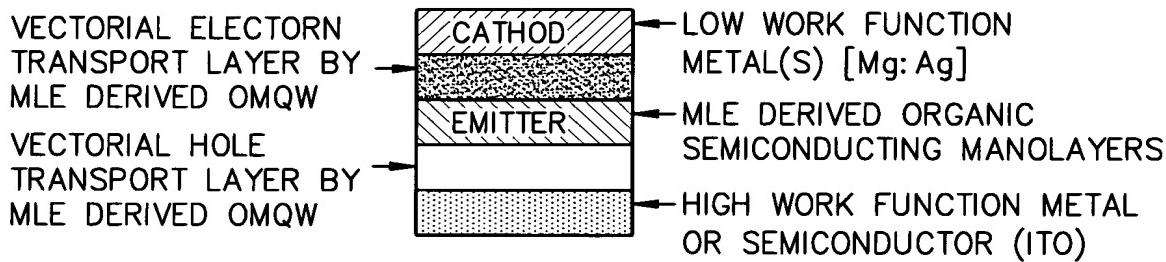


FIG. 17A

FIG. 17B

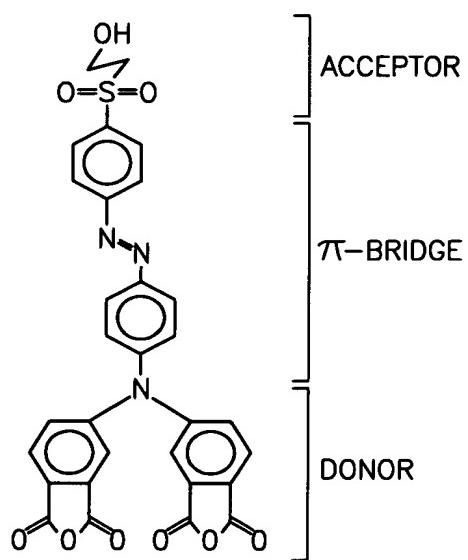
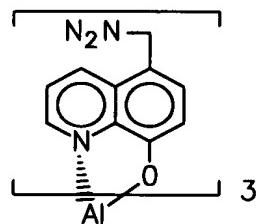


FIG. 18

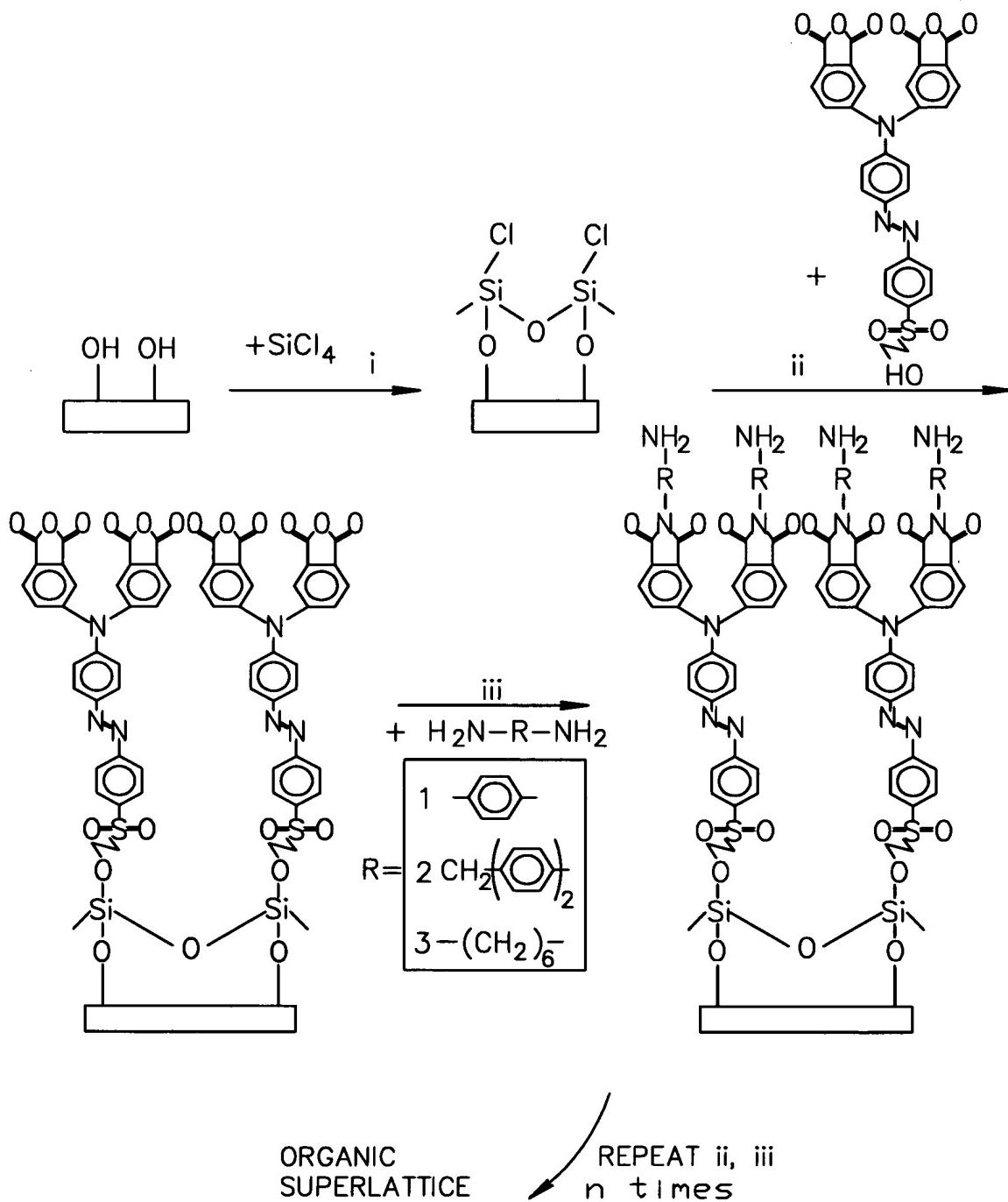


FIG. 19